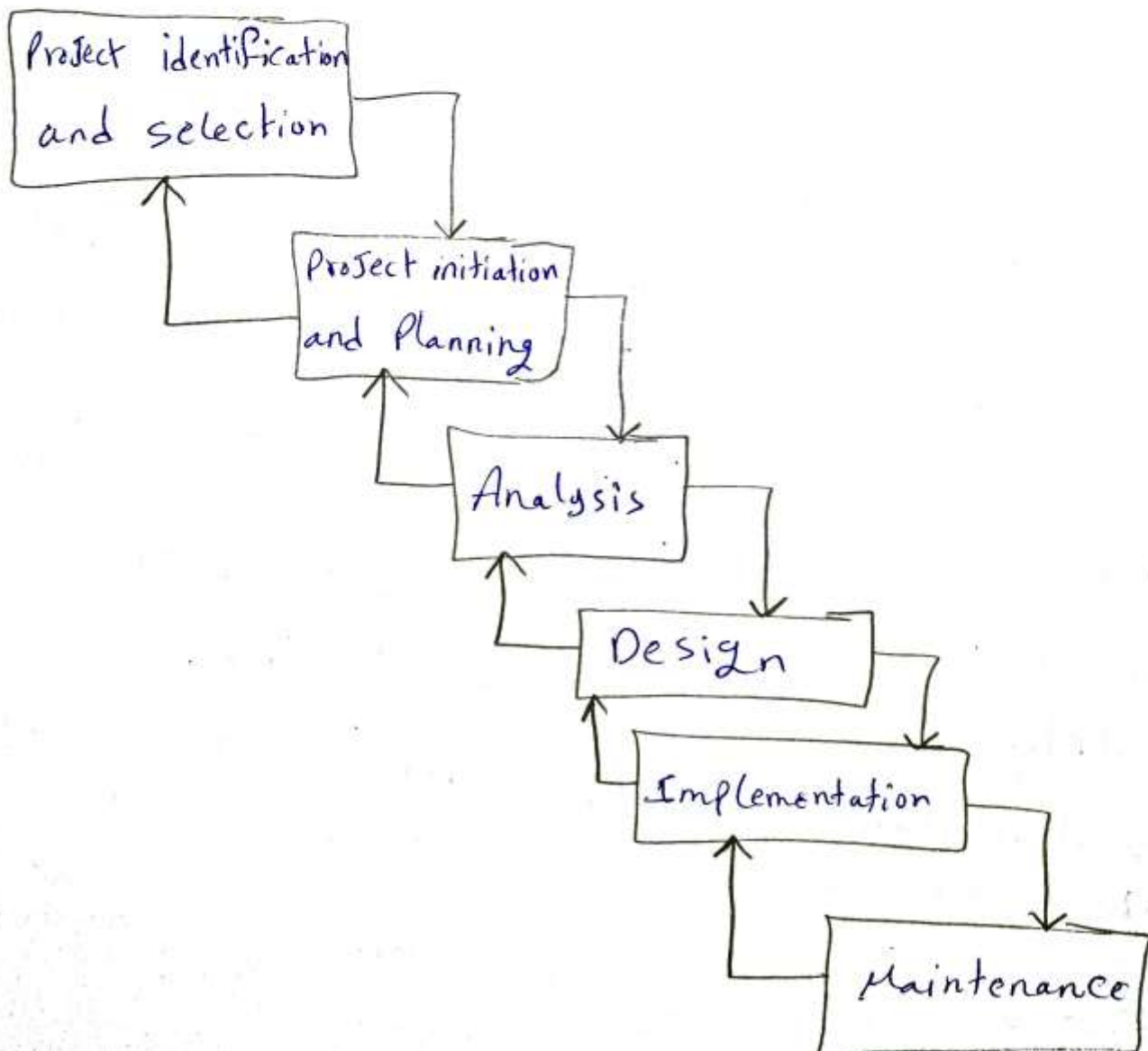


S-D ch:2

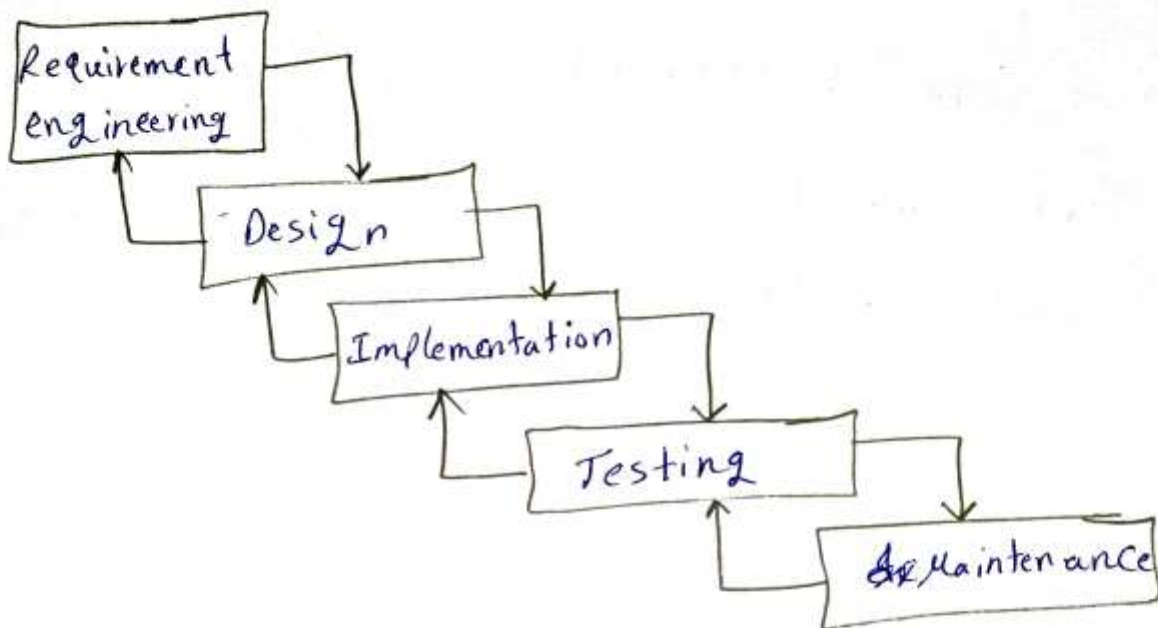
* steps required required to develop S-W?

- 1) Water Fall model
- 2) Prototyping.
- 3) incremental development.
- 4) integration from reusable components.
- 5) spiral model

1) Water Fall model



water Fall (compact)



2) Prototyping

a) in systems where requirement (of user) are unclear we better make prototype of sys. before making the final version.

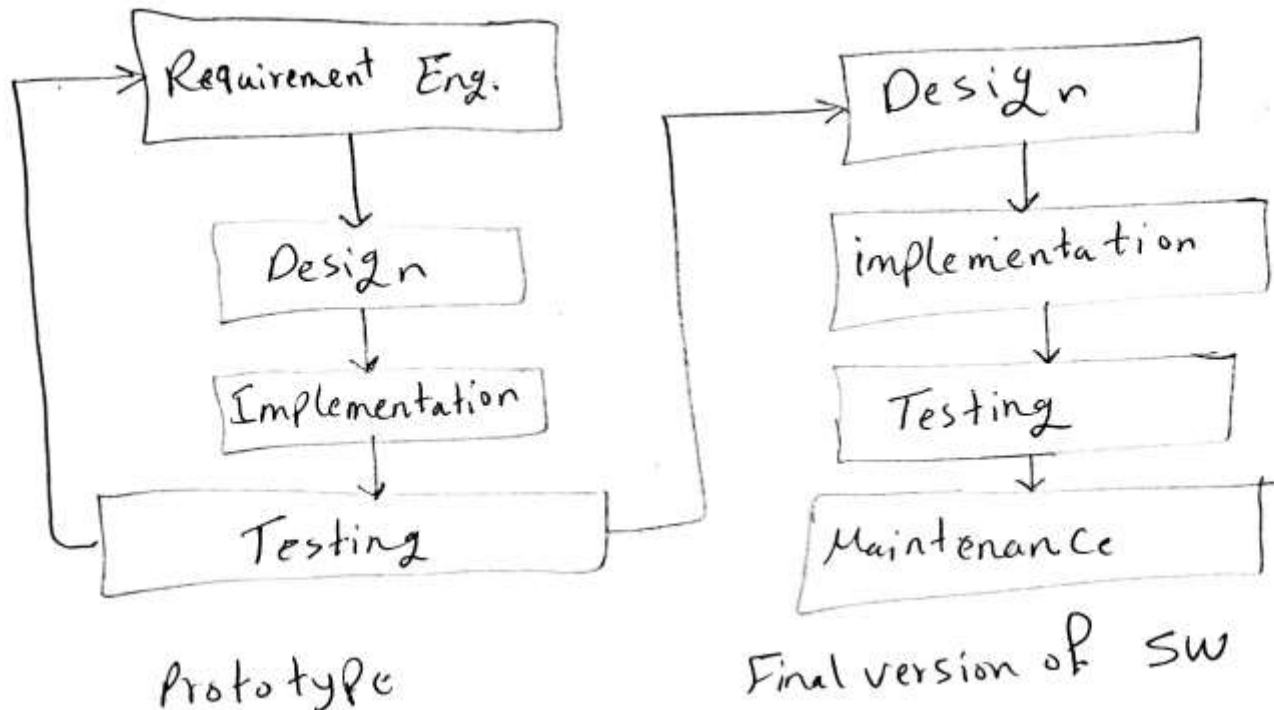
b) In other products like cars & phones we can make a number model (prototypes) with different organizations and choose one of them by testing.

→ not applicable in s.w, as larger cost in other products are being in making copies of chosen one.

⇒ in s.w make copies is free.

* To make a SW prototype; we can:-

- 1) make a complete working part of SW which will be repeated for the other functions of the SW.
- 2) Develop a SW with less functions (or non working fn.)



Types of Prototyping

a) Throwaway

- Objective is to understand system requirements.
- It should start with poorly understood " " .

b) Evolutionary Prototype:

- evolve prototype by add new requirements or change of them generating new prototype (much more used)

Problems of Prototype

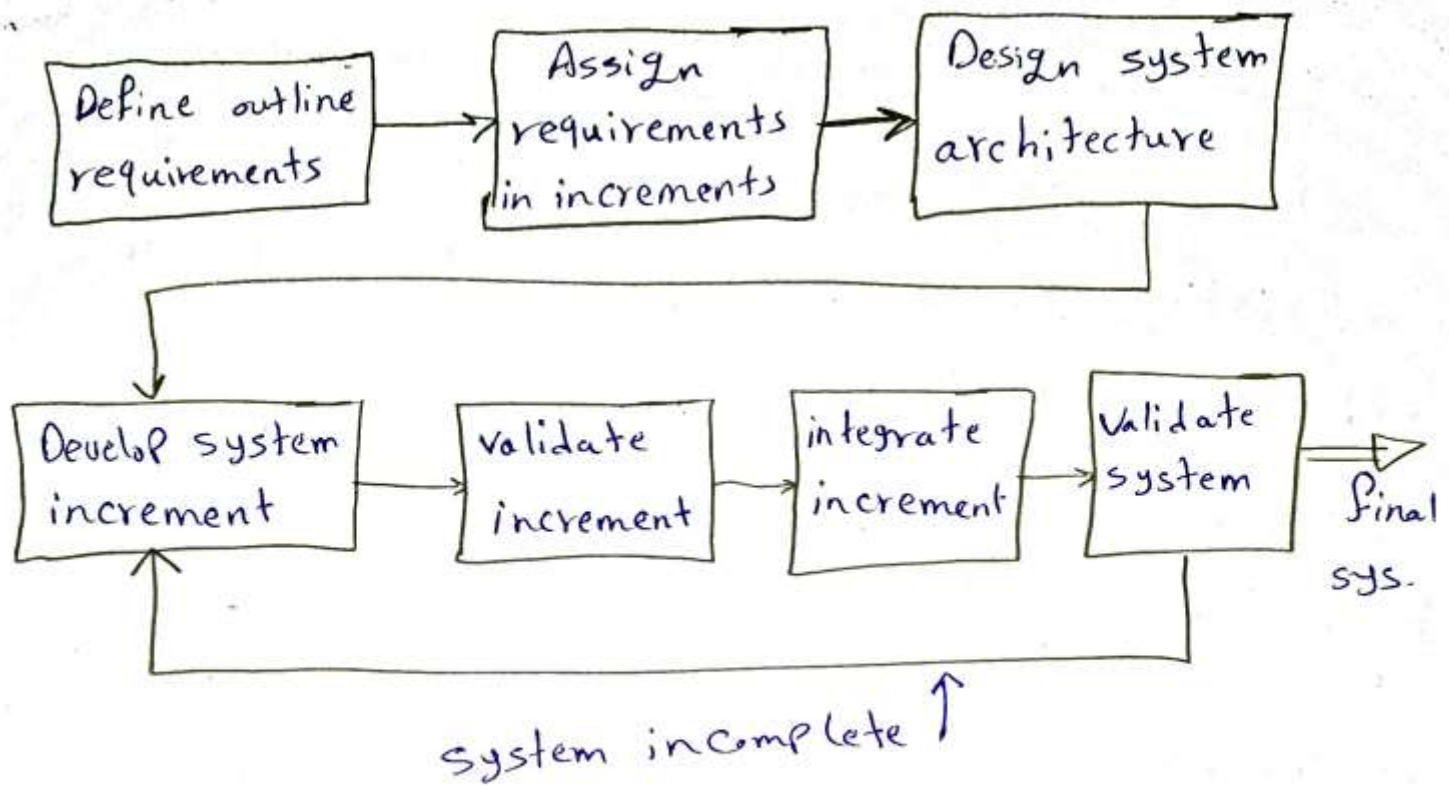
- 1) lack of process visibility.
- 2) system are often poorly structured.
- 3) need of special skills.

* Prototype is better used when

- 1) user requirements are not clear.
- 2) For small or medium-size interactive systems
"user interface is important"
- 3) For parts of large systems (e.g. user interface)
- 4) For short-lifetime systems.

3) Incremental Development

- in prototype → final version of SW is the only one delivered.
- In Incremental, small, yet working version of the SW is delivered to the users.
- Then, step by step add or modify functions into the available version generating a new version which is delivered to the user.



→ development and delivery of the system is broken down into increments, with each increment delivering part of required functionality that is better than deliver system as a single delivery.

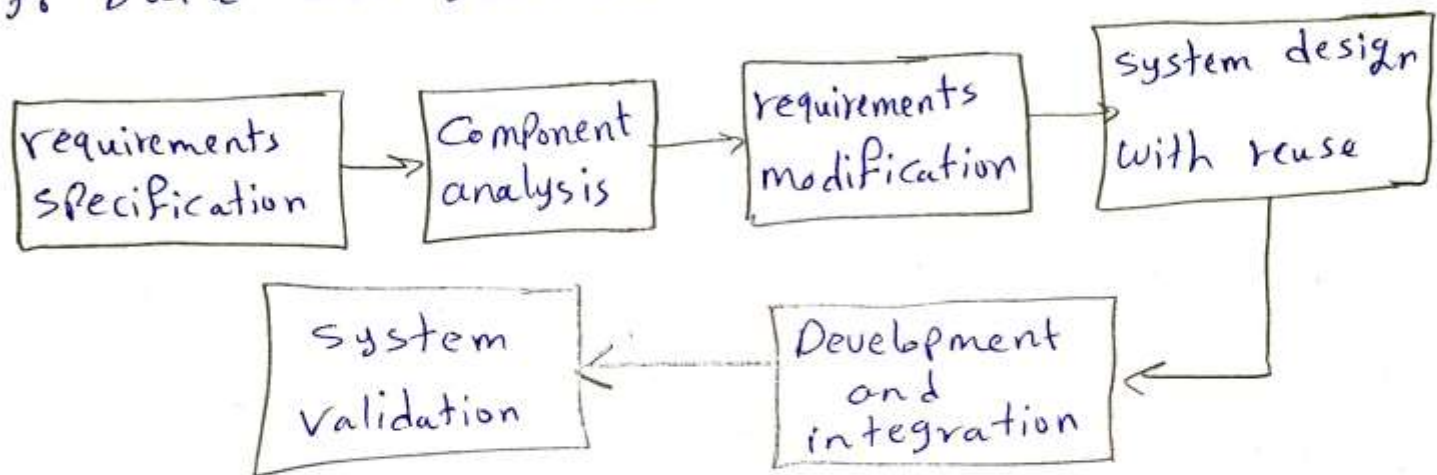
→ user requirements are prioritised and the highest priority requirements are included in early increments.

→ requirements are stopped when the development of an increment is started.

→ requirements for later increments can continue to evolve.

Integration for reusable Components

- It is highly used specially in big Companies.
- Existing Components of previous developed SW and integrated to generate new SW.
- This minimizes the cost and time required to build SW from zero point.



Spiral model

- It integrates both (Prototype and increment) to generate SW.
- also it can integrate the maintenance activities.
- ⇒ in each round of spiral, there are activities are performed:
 - a) identify a problem (maintenance), new step (incremental) or new requirement (Prototype)
 - b) solve the problem by following the rest of steps of SDLC.

Team organization

1) Hierarchal

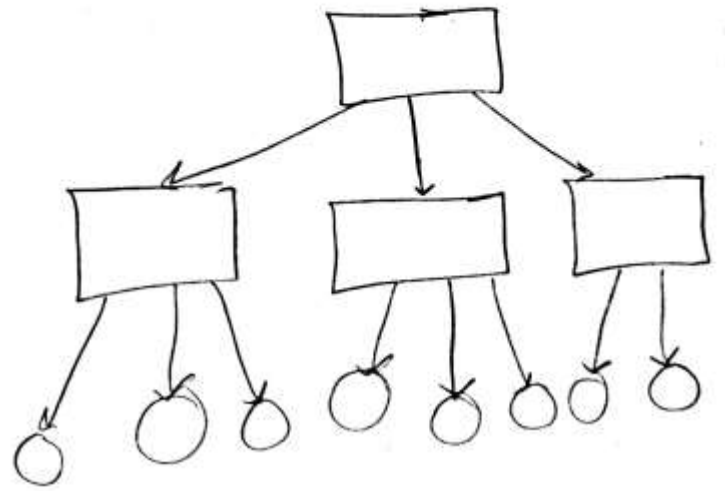
→ suitable for big Companies.

*Advantages

→ well organized

*Disadvantages

- a) take along time of orders to go from up to down of complaints from down to up.
- b) lower levels are the actual workers, and are not allowed to make decisions.



2) Matrix organization

- a) suitable for medium & small size Companies.
- b) Each employee has a matrix which describes his role in the different available Projects.

Project ID	Analysis	Design	Test	Graphics	Database
Project 1	X		X		X
Project 2	X	X		X	

Tbl for worker 1

Advantages

- 1) use all the person capacity.
- 2) save human resource, and this save money.

Disadvantages

- 1) No specialization for each worker (no Professionalitty)
↳ quality of work is not high.
- 2) Any worker may have more than one Project running at the same time, so he makes mistakes.

→ To solve this problem:-

* we can specify two or more specialities for each worker, so his work will be better.

[3] Chief in Programmers

* used in small companies.

* It consists of group of equal skills programmers under control of chief programmer (has higher skills and experience)

* A secretary is used for doing paper work.

* All decisions comes from chief programmer.

[4] SWAT Team

- * SWAT → Skills with Advanced Technology.
 - * It is group of 5-6 programmers having the same and efficient skills.
 - * decisions are taken through votes.
-